

## Biographical Sketch

### Themistocles Gluck (1853–1942)

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**Abstract** This biographical sketch on Themistocles Gluck corresponds to the historic text, *The Classic: Report on the positive results obtained by the modern surgical experiment regarding the suture and replacement of defects of superior tissue, as well as the utilization of re-absorbable and living tamponade in surgery* (1891), available at DOI [10.1007/s11999-011-1837-7](https://doi.org/10.1007/s11999-011-1837-7).

The innovative and brilliant German surgeon, Themistocles Gluck, was born in Iasi, Moldavia (now, in Romania) in 1853 (Fig. 1). His well-known father was an attending physician for the royal family [8] during a period when there was a large ethnic German population in the region. Gluck began his university studies in Leipzig in 1873, studying under the Swiss Anatomist, Wilhelm His (see [1]), and continued his medical studies in Berlin in 1875. His professors in Berlin included Bernhard von Langenbeck (founder in 1860 of von Langenbeck's Archiv für Klinische Chirurgie, now Langenbeck's Archives of Surgery [4]) and the eminent pathologist, Rudolf Virchow [2]. Gluck was evidently an excellent student and won a prize for research on nerve regeneration that he had conducted under the



**Fig. 1** Themistocles Gluck [3].

supervision of Virchow. He completed his degree in 1882, but, according to Eynon-Lewis et al. [8], was unable to continue a university career because von Langenbeck retired and his replacement, von Bergmann, evidently found no position for him. He returned to his homeland and worked for a short time in Bucharest, but then practiced industrial medicine in Berlin until 1890, when he was appointed as head of surgery at the Emperor and Empress Friederich Paediatric Hospital.

Gluck had a remarkable career and was judged by Eynon-Lewis et al. as an “unrecognized genius” [8]. He was most likely the first to implant artificial joints in the 1880s. According to Surin [16], he was responsible for many other remarkable concepts and developments: stress shielding, joint allografts (although he reportedly never performed any such transplants), intramedullary fixation (with ivory cylinders), biocompatibility (again, with ivory,

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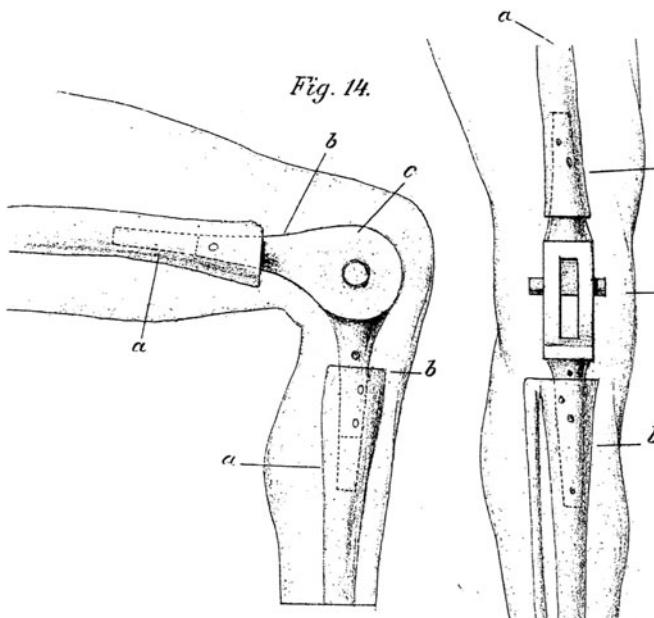


Fig. 14.

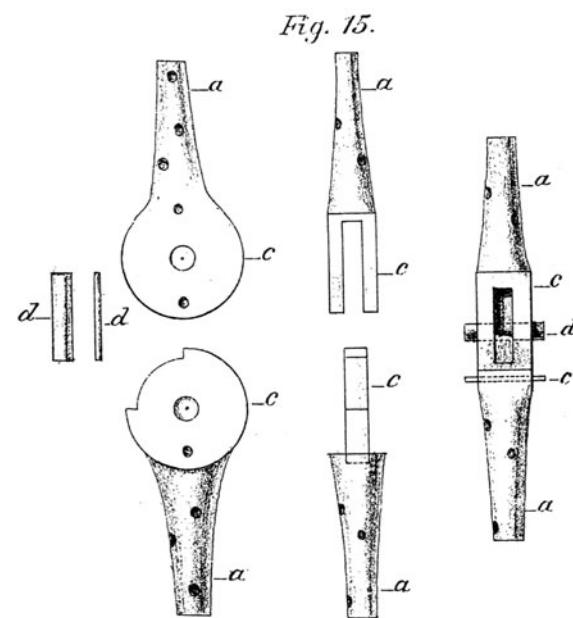


Fig. 15.

**Original Figs. 14–15** Illustrations of joints suggested by Gluck [10] (Reprinted from Gluck T. Referat über die durch das moderne chirurgische Experiment gewonnenen positiven Resultate, betreffend

die Naht und den Ersatz von Defecten höherer Gewebe, sowie über die Verwendung resorbirbarer und lebendiger Tampons in der Chirurgie. *Arch klin chir.* 1891;41:187–239.)

a material he considered better than others). His interest in bone defects was almost certainly encouraged by his work as a wartime surgeon in the Balkans in 1877 and 1885, during which he first successfully used steel plates to fix a broken femur and replace part of a mandible [14]. He also experimented with bone cements, including copper amalgam, plaster of Paris, and a stone putty (resin with pumice or gypsum) [9]. Thus, he antedated 20th Century pioneers, such as Haboush (1953) [11], Wiltse (1957) [18], and Charnley (1964) [5, 6], in the use of implantable cements by more than 50 years. He described a number of surgical procedures for the larynx, trachea, lung, and inguinal hernias. It is interesting to note that he performed vessel sutures and venous grafts in the 1880s [10], which predated by many years the work of the American surgeon Alexis Carrel who received the Nobel prize for vascular repair in 1912. He anticipated Küntscher's popularization of intramedullary fixation of fractures [12] by 50 years. Gluck's pioneering work was often dismissed, but in his later life he was honored for his accomplishments, being listed on the honor roll of the German Surgical Society. Gluck died at age 88 in Berlin in April 1942.

The earliest dates of his implantations of artificial joints are variously reported as the mid 1880s [16] to 1890 [8]. Gluck believed that preliminary animal experiments were essential, and implanted his ivory devices in animals before attempting them in humans [8]. Remarkably, he designed and implanted artificial wrists, elbows, shoulders, hips, knees, and ankles (Original Figs. 14–15) (Another pioneer, Jules-Émile Péan, implanted an artificial shoulder made of

platinum a few years later in 1893 [13, 15]). In May 1890, Gluck inserted a hinged ivory joint (Original Figs. 14–15) into the knee of a 17-year-old girl; this design was not dissimilar from those of the early constrained total knee arthroplasty prostheses introduced in the second half of the 20th Century. He reported performing 14 arthroplasties in that year, including a hip, but only provided details on five cases: three knees, a wrist, and an elbow [10, 17]. The procedures appeared successful over the short term; however, all of the five patients in the report suffered from tuberculosis, and all developed complications because of the chronic infection. Three of the five prostheses were removed (the wrist and one of the knees were left in situ). He later realized that prior joint infection was a contraindication to joint arthroplasty.

The Classic this month is abridged from a treatise based on a paper he partially presented at the 4th Session of the 19th Congress for the German Society for Surgery in Berlin on April 12, 1890 [10]. (The full German text is available online. Supplemental materials are available with the online version of CORR.) The entire treatise involves many topics, including microsurgery for nerve regeneration and vascular repair, as well as the use of external fixation in the treatment of fractures and other traumatic events. We have excerpted primarily those portions relevant to his use of ivory constructs as endoprostheses. The text is written in a style typical for German writing at the time: long and somewhat cumbersome statements, often unclear for our current thinking. (Mark Twain commented about 19th Century German language; “Whenever the literary German

dives into a sentence, that is the last you are going to see of him till he emerges on the other side of his Atlantic with his verb in his mouth” [9].) We have noted some statements for which we found the meaning unclear. We have also taken some license in condensing and using more contemporary English syntax and terms when we understood the intent.

In order to help those in attendance better visualize his concepts, Gluck apparently fitted a human skeleton with his artificial joints, including a hip, knee, ankle, wrist, elbow, and shoulder [7]. According to Eynon-Lewis et al. [8], von Bergmann, forbade him from presenting his results: he wrote to Gluck, “As the leader of German surgery I cannot allow that you discredit German science in front of a platform of international surgical specialists. My pupils and I will fight you with all means.” The most lasting evidence of his work, the display he created, reportedly became known as “The Skeleton of Paris” and was shown in multiple venues around Europe until it, along with the rest of the Berlin Medical Collection, was taken to the Soviet Union by the Red Army after World War II [7].

Gluck had no overly optimistic view of surgery of the day: “Surgery on the whole retains a destructive character, but despite this unavoidable aspect, this last decade has brought to full blossoming and development, conservative and reparative approaches.” He realized that part of the success of his operations had to do with the biological reactions to his implants (“action de présence”). He anticipated wear of the parts. He observed the immediate pain relief after fixation: “In clinical cases, it is surprising that besides the immediate functional effect, the part has been absolutely free of pain immediately after the surgery. There is a total lack of fracture pain because of the absence of motion of the fragment.” He had a humanitarian view: “...going through life, the surgeon is always motivated and guided by the wish to alleviate suffering and to avert danger and on occasion is encouraged, by means of a new interpretation of known scientific facts, usually not previously discussed and therefore not utilized for a long time and facts with meaning that should not be underestimated.” Presciently, Gluck commented; “We can certainly make the observation in medicine, as often also in other scientific disciplines, that certain facts have been known as such for a long time before their value is truly recognized.” Although today he is largely unrecognized, we should appreciate that his accomplishments in the field of endoprostheses alone should enable him to be remembered as the first “arthroplasty surgeon.”

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